STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0119962
Owner:	Sharpe Land and Cattle Company
Address:	500 East Ninth, Kansas City, MO 64106
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Sharpe Land and Cattle Company
Facility Address:	Rural Route 1, Box 104, LaBelle, MO 63447
Legal Description:	See Pages 2-4
Latitude/Longitude:	See Pages 2-4
Receiving Stream:	Troublesome Creek(C) Seebers Branch (U)
First Classified Stream and ID:	Troublesome Creek(C)(00074) South Fabius River(P)(00071)
USGS Basin & Sub-watershed No.:	(07110003-030001) (07110003-020002)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Outfalls #001 - #010 - Concentrated Animal Feeding Operation - SIC Codes #0241 and #0214 - Class 1A
No Discharge of Process Waste
Eight earthen storage basins/one three-cell lagoon/one concrete storage pit/solids separation/liquids and solids are land applied/domestic wastewater systems/stormwater runoff/solids and dead animal composters.
Design population equivalent is 170,136.
Design flow for animals: 181,793,775 gallons per year. (0.498 mgd)
Design flow for domestic: 6,973,690 gallons per year. (0.019 mgd)
Design number of animals is 8,514 dairy cows and 500 goats. (12,213 animal units)

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

May 16, 2003 — Effective Date
September 3, 2004 — Revised

Stephen M. Mahfood, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

May 15, 2008
Expiration Date

Jim Hull, Director of Staff, Clean Water Commission

MO 780-0041 (10-93)

FACILITY DESCRIPTION: (continued)

The farm consists of 3 animal complexes designated Outfalls 001, 002, 003 and 009. Outfall 001 (west complex) and Outfall 002 (east complex) may contain approximately 2,625 dry cows or equivalent combination of cows, heifers, or calves each. Outfall 003 (dairy milking parlor and free stall barns) may contain approximately 4,464 dairy cows. The number of animals at each complex may vary provided the total number of cows at the operation does not exceed 8,514 head. Lots are concrete surface. Solids will be scraped from the East complex and stored in a concrete pit located at the East complex to be land applied using a solids spreader. A PVC pipe drains any precipitation collected in the concrete pit to the earthen storage basin on site. The residual manure from the complex will be washed to an earthen storage basin, via precipitation runoff. Wastes will be removed from the milking parlor using a freshwater flush system and from the free stall barns using recycled water and a solids separator. Remaining wastewater will be transported to an earthen storage basin via PVC pipe. Wastewater from the four earthen storage basins will be land applied using irrigation equipment. All land application will be based on the plant available nitrogen approach. Solids and dead animals may be composted. Composted dairy manure qualifies for a permit exemption in accordance with Missouri Clean Water Law and Regulations under 10 CSR 20-6.015(3)(B)8 as an organic fertilizer product for agricultural production. Compost that meets Class-A pathogen criteria would qualify for unrestricted public use either as an organic fertilizer, compost product, or potting soil in either bag or bulk form.

Total Number of Acres Available for Land Application:			
Percent Slope	Land Owned by Permittee	Non-owned Land with Spreading Agreements	Total Acres
0 - 10%	7304	0	7304
10 - 20%	0	0	0
TOTAL	7304	0	7304

Outfall #001 – West Complex
System Type: Earthen storage basin/solids composter
Legal Description: SW¼, NW¼, SE¼, Sec. 4, T60N, R9W, Lewis County
Lat/Long: +4001289/-09154046
Design Number of Animals: 2,625 dairy dry cows, or equivalent combination of cows, heifers and calves
Design Population Equivalent: 31,500
Runoff Areas to Storage: 550,041 sq.ft. Concrete – Concrete lots may be used for composting solids.
Design Liquid Volume: 27,840,375 gallons per year
Design Storage: 618 days
Storage volume: 6,310,000 cubic feet, 47,199,300 gallons
Total Basin Depth: 16 feet below overflow level
Upper Operating Level: 1.5 feet below overflow level
Lower Operating Level: 14 feet below overflow level
Land Application: Rates are based on the plant available nitrogen approach

Outfall #002 - East Complex
System Type: Earthen storage basin/feed storage area/composting areas for solids and dead animals.
Legal Description: NE¼, SW ¼, NW ¼, Sec. 2, T60N, R9W, Lewis County
Lat/Long: +4001513/-09152241
Design Number of Animals: 2,625 dry cows or equivalent combination of cows, heifers and calves.
Design Population Equivalent: 31,500
Runoff Areas to Storage: 242,682 sq.ft. Concrete.
Design Liquid Volume: 23,564,400 gallons per year
Design Storage 293 days
Storage Volume: 2,535,130 cubic feet, 18,962,770 gallons
Total Basin Depth: 15 feet below overflow level
Upper Operating Level: 1.5 feet below overflow level
Lower Operating Level: 13 feet below overflow level
Land Application: Rates are based on the plant available nitrogen approach

FACILITY DESCRIPTION: (continued)

Outfall #003 - Dairy Complex
System Type: Two earthen storage basins/one reserve storage basin/fresh water flushing system for milking parlor/recycle flushing system for free stall barns/solids separation.
Legal Description: NE ¼, NE ¼, SE ¼, Sec. 3, T60N, R9W, Lewis County
Lat/Long: +4001395/-09152417
Design Number of Animals: 4,464
Design Population Equivalent: 107,136
Animal Units: 6,377
Runoff Areas to Storage: 91,760 sq.ft. Concrete, 78,000 sq. ft. dirt
Design Liquid Volume (1 in 10 years): 130,389,000 gallons per year
Design Storage: 480 days both earthen storage basins

North Basin:
Storage Volume: 5,797,000 cubic feet, 43,362,000 gallons
Design Storage: 175 days
Total Basin Depth: 14 feet below overflow level
Upper Operating Level: 1.0 feet below overflow level
Lower Operating Level: 12 feet below overflow level

South Basin:
Storage Volume: 9,869,500 cubic feet, 73,829,000 gallons
Design Storage: 305 days
Total Basin Depth: 18.5 feet below overflow level
Upper Operating Level: 1 feet below overflow level
Lower Operating Level: 16.5 feet below overflow level

Solids Separator:
Biosolids Volume: Average: 11,000 tons per year
Storage Volume: 69,000 cubic feet
Land Application: Rates are based on the plant available nitrogen approach

Outfall #004 - Concrete Storage Pit
System Type: Concrete storage pit for manure solids from east complex and solids separator.
Legal Description: SW ¼, NW ¼, NW ¼, Sec 2, T60N, R9W, Lewis County
Lat/Long: +4002017/-09152255
Biosolids Volume Average: 1,327,000 cu. ft. per year
Design Number of Animals: Solids storage for manure removal from east lots and solids storage from solids separator at dairy.
Land Application: Rates are based on the plant available nitrogen approach

Outfall #005 - Domestic Wastewater - SIC #4952
Dairy Milking Parlor:
No-discharge domestic wastewater system consisting of a single cell earthen basin and irrigation serving a total of 34 employees, 5 visitors, and 36 residents.
Legal description is NE¼, SE¼, Sec. 3, T60N, R9W, Lewis County
Lat/Long: +4001407/-09187167
Design population equivalent is 47
Design flow is 4970 gallons per day including storm water flows
Design flow is 4185 gallons per day dry water flows
Operating levels are:
Freeboard of one (1) foot above the emergency spillway
Upper operating level of one (1) foot below overflow elevation
Lower operating level of seven (7) feet below overflow elevation
Storage capacity: 730,270 gallons; 120 days storage
Application rate is based on irrigation of primary treated wastewater using a hydraulic loading rate.
Irrigation design flow is 1,814,050 gallons/year including 1-in-10 storm water flows
Application rates are 0.25 inch/hour; 1.5 inches/week; 9 inches/year
Irrigation site is a total of 8.9 acres
Vegetation grown on the irrigation site is grass land/row crops
Irrigation equipment type is traveling gun

FACILITY DESCRIPTION: (continued)
Outfall #005: (continued)

Office/Cafeteria/Rehabilitation Complex:
Legal description is NE¼, SE¼, Sec. 4, T60N, R9W, Lewis County, located adjacent to West Basin site
Lat/Long: +4001407/-09152417
Three-cell lagoon/wastewater irrigation/sludge is retained in lagoon
Design population equivalent is 145
Design flow is 14,136 gallons per day including storm water flows
Design flow is 11,100 gallons per day dry weather flows

Operating levels of cell 1 are:
Freeboard of one (1) foot above the emergency spillway
Upper level of two (2) feet below overflow elevation
Lower level of four (4) feet below overflow elevation
Operating storage capacity between lower and upper operating levels is 1,137,316 gallons and 103 days storage
Approximate lagoon dimension is 66,000 square feet at 6-foot depth

Operating levels of cell 2 are:
Freeboard of one (1) foot above the emergency spillway
Upper level of two (2) feet below overflow elevation
Lower level of four (4) feet below overflow elevation
Operating storage capacity between lower and upper operating levels is 238,284 gallons and 22 days storage
Approximate lagoon dimension is 17,270 square feet at 6-foot depth

Operating levels of cell 3 are:
Freeboard of one (1) foot above the emergency spillway
Upper level of two (2) feet below overflow elevation
Lower level of five (5) feet below overflow elevation
Operating storage capacity between lower and upper operating levels is 184,874 gallons and 16 days storage
Approximate lagoon dimension is 17,270 square feet at 10-foot depth
Total system operating storage capacity between lower and upper operating levels is 1,560,474 gallons and 141 days storage

Application rate is based on irrigation of secondary treated wastewater using a hydraulic loading rate
Irrigation design flow is 5,160,062 gallons/year including 1-in-10 year storm water flows
Application rates are 0.25 inch/hour; 1.5 inches/week; 24 inches/year
Irrigation site is a total of 8 acres
Irrigation site has field slopes less than 12 percent slope
Vegetation grown on the irrigation site is grass land/row crops
Irrigation equipment type is traveling gun

Outfall #006 – Fresh Water Lake Monitoring
This is a privately owned lake located on permittee property that is used as a water source for livestock. The sample location is within the lake at a lake surface location near the discharge structure.
Legal Description: NE ¼, SW ¼, SE ¼, Sec 4, T60N, R9W, Lewis County
Lat/Long: +4001295/-09154063
Lake discharge is to Unnamed Tributary to Troublesome Creek.

Outfall #007 – Stream Monitoring
Legal Description: SW Sec 16, T61N, R9W, Lewis County
Lat/Long: +4005001/-09154489
Troublesome Creek at Highway D (Class C)

Outfall #008 – Stream Monitoring
Legal Description: SE Sec 13, T60N, R9W, Lewis County
Lat/Long: +3959522/-09150371
Troublesome Creek at Highway 156 (Class C)

Sharpe Land and Cattle – Addition of Goat Milking Facility to Operating Permit

Outfall #009 – Goat Milking Complex – SIC #0214
System Type: Earthen basin for milking parlor waste/milking parlor using fresh water only/no-discharge domestic waste earthen basin. Goats will be kept on pasture when not being milked.
Legal Description: SW ¼, NW ¼, Sec. 16, T60N, R9W, Lewis County
Lat/Long*: +40 00 10.4/-91 54 44.2
Design Number of Animals: 500
Design Population Equivalent: 500
Animal Units: 50

Domestic Waste Basin: SIC #4952
Storage Volume: 18,900 cubic feet, 141,600 gallons at overflow level
Design Storage: 365 days
Total Basin Depth: 10 feet below overflow level
Upper Operating Level: 1 foot below overflow level
Lower Operating Level: 8 feet below overflow level

Animal Waste Basin: SIC #0214
Storage Volume: 110,600 cubic feet, 827,200 gallons at overflow level
Design Storage: 365 days
Total Basin Depth: 11 feet below overflow level
Upper Operating Level: 1 foot below overflow level
Lower Operating Level: 8.4 feet below overflow level

Receiving Stream: Seebers Branch (U) to South Fabius River (P) 0071
USGS Basin & Subwatershed No.: 07110003-010002

Outfall #010 – Washburn Farm

System Type: Earthen storage basin for additional wastewater storage
Legal Description: SE ¼, NE ¼, Sec. 1, T60N, R10W, Knox County
Latitude/Longitude: +4001510/-09157170
Storage Volume: 8,949,387 cubic feet, 66,941,414 gallons
Total Basin Depth: 21 feet below overflow level
Upper Operating Level: 1.0 feet below overflow level
Lower Operating Level: 19.0 feet below overflow level
Land Application: Rates are based on the plant available nitrogen approach

Receiving Stream: Seebers Branch (U) to South Fabius River (P) 0071
USGS Basin & Subwatershed No.: 07110003-010002

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS		
		REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfalls #001-#005 and #009-#010 – Emergency Discharge Monitoring				
Flow	MGD	No discharge of process waste except during emergency conditions.	once/day during discharge	24 hr. estimate
Dissolved Oxygen	mg/L	Comply with Water Quality Standards.	once/day during discharge	grab
Ammonia Nitrogen as N	mg/L	See Special Condition #1, #2, & #3.	once/day during discharge	grab
Outfalls #001-004 and #009-#010 (Animal Waste Basin) – Nutrient Monitoring For Land Application				
Total Kjeldahl Nitrogen as N	mg/L	See Special Condition #6.	four times/year	composite
Ammonia Nitrogen as N	mg/L	Sample liquids 4 time/year between March 1 and November 30 and 1/year for nitrate.	four times/year	composite
Total Phosphorus as P	mg/L		four times/year	composite
Nitrate + Nitrite as N	mg/L		once/year	composite
Solids	%	(Note Solids tested for sludge only)	Sample solids or sludges once per month during land application	composite
Outfalls #001-005 and #009-#010 – Land Application Operational Monitoring				
Storage Structure Freeboard	Feet	See Special Condition Numbers 7 and 17 through 23.	once/month	measured
Land Application	hours		daily	total
Amount Land Applied	gallons or cubic feet		daily	total
Application Area	acres		daily	total
Application Rate	inches/ acre		daily	total
Rainfall	inches		daily	total

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE January 28, 2005. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS		
		REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #006 – Fresh Water Lake Monitoring				
Flow	MGD	See Special Condition #23.	March, May, July, September and November	24 hr. estimate
pH - Units	SU	Monitoring requirement only.		grab
Ammonia Nitrogen as N	mg/L	Report flow for discharge from the lake.		grab
Nitrate + nitrite as N	mg/L			grab
Total Phosphorus as P	mg/L	Collect surface water samples from within the lake at a location near the discharge structure.		grab
Temperature	°C			grab
Total Suspended Solids	mg/L			grab
Outfalls #007 & #008 - Stream Monitoring				
Flow	MGD		once/month	
pH – Units	SU	Permittee shall not cause exceedance of stream limits.	once/month	grab
Ammonia Nitrogen as N	mg/L		once/month	grab
Nitrate + Nitrite as N	mg/L	See Special Condition Numbers 1 & 23.	once/month	grab
Total Phosphorus as P	mg/L		once/month	grab
Temperature	°C	Sample shall be collected during the same week on a pre-determined sampling date on a monthly basis so sampling dates are unbiased by flow condition.	once/month	grab
Total Suspended Solids	mg/L		once/month	grab
Dissolved Oxygen	mg/L		April through November between 5:00 AM and 9:00 AM	
		Samples shall be only collected from flowing water. Samples from riffles are preferred. Do not collect a sample from pools that do not have water flowing into or out of the pool.		

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE January 28, 2005. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

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A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS		
		REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
All Application Fields – Storm Water Monitoring within 24 hours after land application				
Ammonia Nitrogen as N	mg/L	See requirements below. See Special Condition Number 1.	See sample collection frequency requirements below in paragraph d & e.	grab
Nitrate + Nitrite as N	mg/L			grab
Temperature	°C			grab
pH – Units	SU			grab
Date of Runoff				
Field Number				
Crop				
Application Equipment				
Application Rate				

a. This is a monitoring only requirement.
b. This monitoring procedure will be used to evaluate the rainfall runoff from fields that have received rainfall within 24 hours after land application of process waste.
c. Samples shall be collected from one location that has rainfall runoff at the field boundary.
d. Samples shall be collected within the first sixty (60) minutes after the start of the runoff, or as soon as possible. Sampling is only required to be conducted during daylight hours. Permittee will address specific sampling procedures in Operations and Maintenance Manual.
e. The maximum number of samples required per calendar quarter is four (4). Any combination of runoff events and fields may be used.
f. One control sample shall be collected per quarter. The control sample may be collected (1) during the same rainfall event from a field with the same crop and no land application of process waste or (2) from the location where the 24-hour sample was collected but during a subsequent rainfall event that has not occurred within 24 hours after land application of process waste.

All Outfalls - Monitoring of Unauthorized Discharges				
Flow	MGD	No discharge of process waste. Water Quality Standards do not have to be exceeded to determine process waste being discharged. An unauthorized discharge is a permit violation in itself. See Special Condition Numbers 1, 2 & 3.	24 hr. estimate	
Dissolved Oxygen	mg/L		once/day during discharge	grab
Ammonia Nitrogen as N	mg/L		once/day during discharge	grab
pH – Units	SU		once/day during discharge	grab
Temperature	°C		once/day during discharge	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE January 28, 2005. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	MONITORING REQUIREMENTS		
		REQUIREMENTS	MEASUREMENT FREQUENCY	SAMPLE TYPE
All Outfalls - All Land Application Fields - Soil Monitoring				
Nitrate nitrogen as N	mg/kg	See Special Condition Numbers 6, 8 & 21	Once/year In spring prior to planting	Composite
Soil pH	Std Unit		once/three years	composite
Per Cent Organic Matter	%		once/three years	composite
Cation Exchange Capacity	Std Unit		once/three years	composite
Available Phosphorus as P (Bray P-1 test method)	mg/kg		once/three years	composite

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE October 28, 2005. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

C. SPECIAL CONDITIONS

1. Water Quality Standards

   a. Operation of this facility shall not cause a violation of water quality standards rule under 10 CSR 20-7.031.

   b. General Criteria

   The following water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:

   (1) Waters shall be free from substances in sufficient amounts to cause the formation or putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
   (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
   (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
   (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal, or aquatic life;
   (5) There shall be no significant human health hazard from incidental contact with the water;
   (6) There shall be no acute toxicity to livestock or wildlife watering;
   (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
   (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such material is specifically permitted pursuant to section 260.200-260.247.

C. SPECIAL CONDITIONS (continued)

2. No-Discharge Requirement: No Discharge except during emergency conditions
   a. The permittee shall land apply wastewater on suitable days as needed to keep the storage structures within design operating levels. The storage structures shall be maintained as near to the minimum operating levels as practicable so as to provide capacity for process wastewater flows plus the 1-in-10-year chronic rainfall and the 25-year, 24-hour rainfall based on the design storage period listed in the facility description. There shall be no-discharge of process waste during dry weather conditions when soils are suitable for irrigation. If wastewater has been properly land applied on suitable days during the last 12 months, emergency discharge is allowed by overflow through the emergency spillways of the storage structures due to storm events exceeding the chronic or catastrophic storm events for the design storage period, but discharge shall cease as soon as land application is feasible. Process waste discharge is not allowed by pumping, siphoning, cutting of berms, irrigation runoff, or any other method, except as authorized herein. Permittee shall make every reasonable effort to cease discharge as soon as soil conditions are suitable for irrigation.
   b. Definition: Process Waste
      Process waste as defined in 10 CSR 20-6.300 includes manure, wastewater and any precipitation which comes into contact with any manure, litter or bedding or any other raw material or intermediate or final material or product used in the production of animals or direct products. It includes spillage or overflow from animal watering systems; washing, cleaning or flushing of pens, barns, manure pits or other associated animal operations; washing or spray cooling of animals; dust control; storm water runoff from animal confinement areas and loading and unloading areas; storm water runoff from deposits of airborne dust from building ventilation systems or spillage of feed or manure; discharges from land application fields that occur during land application; and storm water runoff from land application fields if wastes are applied during frozen, snow covered or saturated soil conditions or if application rates exceed the maximum nitrogen utilization of the vegetation grown.

3. Monitoring of Emergency Discharge and Unauthorized Discharge (Outfalls #001-#005 and #009-#010, See Section A page 5 for emergency discharge and all outfalls Section A page 9 for unauthorized discharge)
   a. Any emergency discharge or unauthorized discharge of process wastewater shall be monitored once/day for flow, ammonia nitrogen as N and dissolved oxygen. Unauthorized discharge shall also be monitored for pH and temperature.
   b. Samples shall be collected of the discharge at the downgradient property boundary. Samples shall also be collected from the receiving waters above and below the discharge point. If the receiving drainage is dry above the discharge point, report as no stream flow above the discharge point.
   c. Records shall be maintained for time, date, location, and duration of the discharge and an estimate of the discharge volume.
   d. Notify the department as soon as possible and no later than within 24 hours of any discharge that occurs and submit monitoring results within 30 days.

4. Required Notification of Releases
   a. Any wastewater discharge into waters of the state shall be reported to the Department as soon as possible and no later than 24 hours after the start of the discharge.
   b. Spills or leaks that are contained on the property shall also be reported to the Department within 24 hours, if the flow exceeds 1,000 gallons per day. This includes leaks from sewer lines, recycle lines, flushing systems, storage structures or irrigation systems.

C. SPECIAL CONDITIONS (continued)

5. Sample Collection, Preservation and Testing Methods
Preservation and analytical procedures shall be in accordance with the most current version of Standard Methods for the Examination of Waters and Wastewaters or other approved methods listed in 10 CSR 20-7.015(9)(A).

6. Nutrient Monitoring for Land Application (Outfalls #001-#004 and #009-#010 Animal Waste Basin, See Section A Page 5)
   a. Wastewater from each storage basin shall be sampled and tested at least 4 times/year at regular intervals between March 1 and November 30. Samples shall be tested for Total Kjeldahl Nitrogen (TKN) as N, ammonia nitrogen as N and total phosphorus as P. Samples shall also be tested at least once/year for nitrate/nitrite nitrogen from each storage basin. Each sample shall be a composite sample consisting of at least seven (7) grab samples. Samples should be collected from the storage basin, irrigation pump or wet well, irrigation equipment, recycle pump, or flush tank. The samples shall be taken so as to represent variations in wastewater concentrations within the basins' upper and lower pump down levels. Samples collected directly from the basin shall be taken from two to five feet below the basin water surface, at least fifteen feet from the waters edge and at least seven different locations spaced about equally around the perimeter of the basin. If the basin will be agitated before pumping, the samples must be taken during agitation. When sampling at the recycle pump, the seven grab samples shall be taken at two – three minute intervals or longer. For sampling flush tanks, one or more grab samples shall be taken from each tank.
   b. Solids or sludges shall be sampled and tested separately. At least one composite sample shall be collected for each month when land application occurs. Each composite sample shall consist of at least 20 grab samples. Solids and sludges shall be tested for total Kjeldahl nitrogen as N, ammonia nitrogen as N, total phosphorus as P, nitrate + nitrite as N, and % solids.

7. Land Application Operational Monitoring (Outfalls #001-#005 and #009-#010, See Section A Page 5)
   a. The inches of precipitation received at the production site shall be recorded daily and shall be reported quarterly for daily amounts, monthly totals, and cumulative total.
   b. Daily records shall be kept on file by each field for land application locations, volumes, acres, inches/hour, inches/acre, time of applications, and which basin was being pumped. These shall be summarized in the quarterly and annual reports. Daily totals shall be kept on file by permittee and cumulative amounts submitted quarterly and in the annual report.
   c. Monthly measurements shall be made of the water level in each storage basin and shall be recorded as feet below the emergency overflow elevation. Report quarterly.
   d. Nitrogen application rates, crop yields, crop nitrogen requirements, and other operational monitoring shall be recorded for each field and reported in the annual report.

8. Soil Monitoring
   a. Nitrate nitrogen as N shall be tested once per year. Soil samples may be collected for the top 0-12 inches.
   b. Soil pH, percent organic matter, cation exchange capacity, and available phosphorus as P (Bray P-1 test method) shall be sampled prior to land application and once every three (3) years thereafter, unless no additional land application has occurred at the site. Samples shall be collected for the surface 0-6 inches.
   c. Soil sampling shall be in accordance with University of Missouri (MU) publication G9110, "Sampling Your Soil For Testing" or other methods approved by the department.
   d. Soil testing methods shall be in accordance with North Dakota Agricultural Experiment Bulletin 499-Revised, "Recommended Chemical Soil Test Procedures for the North Central Region" or other test methods approved by the department.
   e. The annual report shall include a summary of the soil test results for each field.

C. SPECIAL CONDITIONS (continued)

9. Operation Description
   a. This permit authorizes operation of the system as indicated in the Facility Description of this permit.
   b. The system listed in the facility description of this permit shall not be placed into operation until submittal of the engineering certification of completed construction and approval by the department.

10. Annual Report
   An annual report is required in addition to the quarterly reporting under Section A of this permit. The annual report shall be submitted by January 28 of each year for the previous growing season from October 1 through September 30 or an alternate 12 month period approved by the Department and listed in the Operation and Maintenance Manual. This report shall be submitted using report forms approved by the Department and shall include a summary of the monitoring and record keeping required by the Special Conditions and Standard Conditions of this permit.

11. Design Parameters
   The design parameters listed below are operational guidelines to predict nutrient generation. Any proposed increases must be reported in accordance with Standard Conditions Part I, Section B, Paragraph 1., and may require a permit modification prior to the proposed change.
   a. Design Population Equivalent: The Design Population Equivalent is the human equivalent based on the annual average daily pounds of animals at the design capacity listed in the permit application. The average daily pounds of animals multiplied by a standard conversion factor equals the Design (human) Population Equivalent. The conversion factors are: 0.015 swine, 0.014 beef; 0.020 dairy; 0.030 laying hen; 0.040 turkey; and 0.05 poultry broiler.
   b. Design Flow: The design flow is based on the maximum annual flows including storm water flows during the one-in-ten year return frequency for annual or 365 day rainfall minus evaporation. The design flow is based on the time period when the flows are generated at the production site and not when flows are land applied. Portions of the design flow may be stored and carried over into the following year for land application, as necessary. Permittee may exceed the design flow when precipitation in any 365-day period exceeds the one-in-ten year annual precipitation amount.
   c. Animal Units: Animal Units are based on the maximum number and weight classification of animals in the permit application. As an operational guideline, the design number of animal units are calculated by averaging the weekly inventory number on a rolling annual basis.
   d. Storage Structure Levels: As an operational guideline, the storage structure levels should be maintained between the lower and upper operating levels during normal operations. If the upper operating level is exceeded, the permittee shall take all reasonable measures to lower the structure level as soon as reasonably practical. Within seven (7) days of the date that a structure's level comes within four (4) inches of the upper operating level, the permittee shall mail a report to the department that identifies the structure(s), the structure level in inches below the emergency spillway and action taken to reduce the structure levels.
   e. Reporting Requirements: The actual operation numbers compared to the permitted design capacity shall be summarized in the annual report.

12. Construction Permits
   All wastewater systems shall be constructed in accordance with a construction permit except where exempted by state regulations under 10 CSR 20-6.300.

13. Emergency Spillways
   All earthen basins or lagoons shall have emergency spillways maintained as shown on the approved construction plans or approved as-built specifications.

14. HB1207
   Permittee shall maintain compliance with all applicable provisions of state law under 640.725 to 640.735 RSMo, Supp.1996 (HB1207).

C. SPECIAL CONDITIONS (continued)

15. Land Application Site Locations
The permittee shall land apply wastewater only to suitable sites located within the overall property boundaries and descriptions listed in the permit application and associated operation plans. Permittee requests for additional sites including non-owned property must follow permit modification procedures prior to land application.

16. Reopener Clause
a. This permit may be reopened and modified or alternatively revoked and reissued, to incorporate new or modified limitations or other conditions pertaining to phosphorus application rates to soils, the adequacy of wastewater lagoon liners, or other special conditions as may be necessary to protect waters of the state.
b. Comprehensive Nutrient Management Plan.
The permit may be modified or reopened to require submittal of a Comprehensive Nutrient Management Plan CNMP) in accordance with USEPA and USDA guidelines and regulations or where determined appropriate by the department to meet water quality standards for nutrients. This determination may be based upon ambient water quality monitoring, Section A monitoring requirements and other applicable information.
c. This permit may be reopened and modified or alternatively revoked and reissued to incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analyses, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the states water quality standards.

17. Separation Distances for Land Application Sites
Separation distances (buffer zones) shall be maintained between the land application site and other features as follows:
a. Surface Application.
1. 300 feet from any losing stream, open sinkholes, water supply wells, or water supply reservoirs;
2. 100 feet from classified gaining streams for Class P and Class C streams listed in 10 CSR 20-7.031); and
3. 50 feet from unclassified gaining streams, public roads, or property boundaries.
b. Subsurface Injection.
1. 300 feet from any losing stream, open sinkholes, water supply wells, or water supply reservoirs;
2. 50 feet from classified gaining streams (Class P and C streams listed in 10 CSR 20-7.031); and
3. 25 feet from unclassified gaining streams, public roads, or property boundaries
c. Implementation procedures for these limitations shall be detailed in the Operation and Maintenance Manual.

18. Hydraulic Application Rates and Field Slopes
a. Hydraulic application rates in acre inches/application pass and acre inches/day shall not exceed the soil infiltration capacity and soil moisture holding capacity (saturation capacity) of the soil. In no case shall the application result in the runoff of applied waste during or immediately following application.
b. Slopes exceeding 20 per cent (20%) shall not be used for land application.
c. For field slopes less than ten percent (0-10%), surface application rates shall not exceed 0.5 acre inches/hour and 1.0 acre inch/day depending on soil type except for short periods when initial soil moisture is significantly below field capacity in accordance with 10 CSR 20-8.020(15)(F)6.
d. For field slopes between ten and 20 percent (10-20%), surface application rates shall be reduced to ½ the rate for slopes less than 10%. Permittee may land apply wastewater on these field slopes only after submitting a revised O&M Manual for achieving the above application rates and receiving prior approval from the department. Permittee shall maintain a topographic map showing slopes and drainage patterns. The number of acres approved for various slope conditions are listed in the facility/operation description section of this permit.

C. SPECIAL CONDITIONS (continued)

e. For subsurface injection, application rates shall be based on soil absorption capacity during land application so that there are no puddles of wastewater on the soil surface. In no case shall the application rate exceed 1.0 inches/day (27,154 gallons/acre). The subsurface application rate and procedures for adjusting the rate to match soil moisture and field slope conditions shall be listed in the approved Operation and Maintenance Manual.

19. Land Application Limitations
   a. Process wastes should be land applied as close as practicable to when plants will utilize nutrients. Fall application for the spring crop season may be used where appropriate, but should not be the primary application period. Process wastes should be utilized as a nutrient resource.
   b. Process wastes shall not be land applied during frozen, snow covered or saturated soil conditions.
   c. Avoid application or reduce application rates and modify application practices when there is a local, applicable weather forecast or observation by permittee of an imminent or impending storm event. Land application shall cease as soon as practicable upon occurrence of any precipitation.
   d. Land application equipment shall be operated in such a manner that wastes do not reach an adjoining property line. Rigorous inspection procedures shall be implemented for insuring that no visual spray drifts across public roads or property boundaries. If the employee detects wind blown mist within 50 feet of an adjoining property line or public roadway, the application equipment shall be either moved farther away or shut down.
   e. All application sites shall use soil conservation practices that meet Soil Conservation Standards of the USDA, Natural Resources Conservation Service (NRCS).
   f. Spray irrigation systems (travelling guns, center pivot, fixed spray nozzles, etc) shall have automatic shut-off devices in the case of pressure loss.
   g. Operators shall check irrigation pipelines, equipment and the perimeter of application fields at least once per hour during land application to insure that applied wastewater does not run off the fields where applied and does not enter waters of the state. Land application rate shall be calculated during start up of spray irrigation equipment each day of operation. Calibration of irrigation systems shall be verified at least once/month using rain gauges or collection pans within the spray pattern of the equipment to determine application rates in inch per application pass and inch per hour.
   h. Permittee shall maintain a daily record of days that are suitable for land application based on soil moisture records, checkbook methods or other methods approved by the department. Suitable days will include soil moisture capacity of less than 75% field (saturation) capacity or other days when application can be performed without creating puddles of wastewater on the soil surface or runoff of applied wastewater. Suitable days by the checkbook method shall include any series of four days or more when there is no significant rainfall, and net evapotranspiration above rainfall exceeds 1.0 inch. When average daily temperatures are above 45 degrees, the typical evapotranspiration rate is 0.2 – 0.5 inch per day.
   i. Implementation procedures for these limitations shall be detailed in the Operation and Maintenance Manual.

20. Land Application Equipment
   a. Subsurface Injection should be considered where feasible and practicable to reduce exposure to wash off by storm water runoff and to retain nutrients in the soil for crop requirements. Surface application may be used when practical.
   b. Permittee shall own or have signed contracts with a commercial applicator to have adequate land application equipment readily available with capacity to apply 120% of the annual process wastewater flows (liquids, sludges and solids) within 60 ten hour days over the number of acres required for nutrient utilization.
   c. Implementation procedures for these limitations shall be detailed in the Operation and Maintenance Manual.

C. SPECIAL CONDITIONS (continued)

21. Nutrient Management
    a. Nitrogen. The permittee shall not exceed the plant available nitrogen management approach as listed in this permit.
    b. Phosphorus. Application rates shall not increase soil P levels above 120 pounds per acre soil test P using Bray P-1 test method. When soil test P is at or above 120 pounds per acre, the nutrient application rates shall not exceed the annual crop uptake levels for phosphorus. When state NRCS standards and guidelines become available, the permit will be revised to include the Phosphorus Threshold and Phosphorus Index methods to be developed under the USDA, NRCS National Policy, General Manual, Part 402.06.
    c. The actual application rates for a given year or growing season must be adjusted based on the approved management approach and the actual wastewater and soil testing results and crop requirement. If crop yields are significantly less than that predicted in the nutrient management plan for reasons other than climatic factors, the application rates must be adjusted or the yields increased through appropriate changes in management practice.
    d. This permit will be modified to require a Comprehensive Nutrient Management Plan(CNMP) after promulgation of applicable EPA rules and guidelines. The CNMP will replace the current PAN and phosphorus methods.

22. Plant Available Nitrogen Procedure
    a. The Plant Available Nitrogen (PAN) method predicts the typical amount of nitrogen that is expected to be available to plants based on the median or average values from the reference publications listed herein. Actual nitrogen available to plants during a growing season may be more or less than the predicted values due to climatic variations. Supplemental nitrogen applications during the growing season may be added to correct plant deficiencies. Wastewater, sludge and fertilizer nitrogen applications shall be based upon crop nitrogen requirements based on realistic crop yield goals. The wastewater application rate shall be calculated as follows:

$$\mathbf{PAN = CNR - SRN - CFN}$$

WHERE: **CFN** = Commercial Fertilizer Nitrogen applied in pounds N/acre.
CNR = Crop Nitrogen Requirement in pounds N/acre
PAN = Plant Available Nitrogen in wastewater and sludges expressed as annual pounds N/acre.
SRN = Soil Residual Nitrogen in pounds N/acre.

    b. Plant Available Nitrogen(PAN) is calculated as follows:

PAN = [Ammonia Nitrogen] x [Availability Factor]
+ [Organic Nitrogen] x [Availability Factor]
+ [Nitrate Nitrogen] x [Availability Factor]

Note: For anaerobic treated wastewater and sludges, the nitrate nitrogen amounts will be negligible and can be ignored.

    c. Plant Available Nitrogen (PAN) Availability factors for wastewater and sludges are as follows:

1. Average availability factors for all fields:

Type of Nitrogen	Surface Application	Immediate Incorporation or Subsurface Injection
Organic	0.25 - 0.75*	0.25 - 0.75*
Ammonia	0.6**	0.9**
Nitrate	0.9**	0.9**

C. SPECIAL CONDITIONS: (continued)

22. Plant Available Nitrogen Procedure (continued)

***** Organic Nitrogen = [Total Kjeldahl Nitrogen as N] - [Ammonia as N]. Availability Factors based on time after application and waste type are:

Type of Manure by Animal Type and Waste Storage Method	Availability Factor by Time Period Year 1	Year 2	Year 3	Cumulative Year 3+
Anaerobic Lagoons (all animals/poultry)	0.35	0.18	0.09	0.62
Liquid storage basins (except poultry)	0.35	0.18	0.09	0.62
Poultry - storage basins and dry litter	0.60	0.10	0.05	0.75
Manure solids – beef, dairy, swine				
without bedding	0.35	0.18	0.09	0.62
with bedding	0.25	0.13	0.07	0.45

NOTES: Year 1 is the current year of manure application; year 2 is the previous year of manure application; and year 3 is manure application two years ago. Nitrogen availability for years 1, 2 and 3 must be added when manure is applied in consecutive years. The cumulative factor is used when manure is applied at about the same rate for 3 consecutive years or longer.

****** Inorganic nitrogen availability (nitrate + ammonia) based on the typical soil and climate conditions when considering additions due to precipitation, dry deposition, and foliar absorption versus losses due to volatilization and denitrification (10% denitrification loss is included). The permittee may choose to use this average value for all fields or may adjust the N availability based on site specific soil conditions using the tables below under paragraph 22.c.2.

2. Field Specific Availability Factors for Inorganic Nitrogen.
For ammonia and nitrate nitrogen factors, the permittee may choose to use the average value for all fields under paragraph C.1. above, or may use the alternate factor on a field specific basis using the tables below. The approved factors for each field will be included in the O&M Manual.

Table A. Alternate Field Specific Availability Factor for Surface Application

Soil Organic Matter %	Excessively well drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained
% of inorganic N (manure., precipitation) available					
< 2	71	66	62	56	45
2-5	66	60	56	49	30
> 5	63	56	49	38	19

Adapted from USDA-NRCS, National Engineering Handbook, Part 651, Animal Waste Management Field Handbook(AWMFH),April 1992, Tables 11-6 and 11-8.

Table B. Alternate Field Specific Availability Factor for Sub-Surface Injection or Immediate Incorporation.

Soil Organic Matter %	Excessively well drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained
% of inorganic N (manure., precipitation) available					
< 2	89	84	78	70	57
2-5	84	76	70	62	38
> 5	80	70	62	48	24

Adapted from USDA-NRCS, National Engineering Handbook, Part 651, Animal Waste Management Field Handbook(AWMFH),April 1992, Tables 11-6 and 11-8.

C. SPECIAL CONDITIONS: (continued)

22. Plant Available Nitrogen Procedure (continued)

d. Soil Residual Nitrogen (SRN).

1. For Annual Crops, the nitrogen availability from soil organic matter must be included based on soil CEC and crop season as follows:

SRN in pound N/acre* = [percent organic mater] x Soil Availability Factor

Soil Availability Factor by Soil CEC Ranges and Organic Matter

Growing Season	Organic Matter	CEC 10	CEC 10-18	CEC >18
Summer	1%	40*	20	10
Winter	1%	20*	10	5

***Note:** If CEC is less than 10 and organic matter is 1.5% or greater, the total SRN is constant at 60 pounds nitrogen for summer and 30 pounds for winter.

2. For Perennial Crops the SRN is considered zero(0) for purposes of these calculations because the SRN has already been considered in the crop fertilization recommendations in the referenced publications.

e. Conversion Factors for laboratory testing results:
[mg/L or mg/kg or ppm] x [conversion factor] = [pounds per Unit Volume]

Unit Volume	Conversion Factors
lbs/acre inch	0.226
lbs/1,000 gallons	0.0083
lbs/100 cubic feet	0.0062
lbs/ton (wet wt)	0.002

f. Crop nitrogen requirements shall be based on University of Missouri publication, Soil Test Interpretations and Recommendations Handbook, as revised or one of the other reference publications listed in this permit. Alternate reference publications may be used only upon prior approval by the department and shall be listed in the approved Operation and Maintenance Manual.

g. If a crop is not harvested, the PAN rate shall not exceed 40 lbs/acre/year and grass vegetation must be maintained on the site.

h. PAN calculations for land used for grazing cattle shall include both manure additions by cattle and crop nitrogen consumed by the cattle based on actual cow days per acre/year. This permit does not authorize grazing of cattle where prohibited by state statute under Chapter 350 RSMo.

i. PAN calculations, application amounts, crop yields and crop removal rates shall be listed in the annual report.

j. Alternate nitrogen availability factors may be considered based upon site-specific conditions for each field and submittal of scientific justification. Alternate factors will be reviewed and approved by the department as part of the Operation and Maintenance Manual.

k. Supplemental nitrogen may be added to row crops when determined necessary for proper plant growth based on testing of plant vegetation or soil nitrate testing during the growing season. Procedures will be reviewed and approved by the department as part of the Operation and Maintenance Manual.

22. Plant Available Nitrogen Procedure (continued)

1. Primary reference publications used herein are:
    1. Livestock Waste Facilities Handbook, Midwest Plan Service, MWPS-18, April 1993.
    2. National Engineering Handbook, Part 651, Agricultural Waste Management Field Book, USDA, Natural Resources Conservation Service (NRCS), April 1992 and current supplements.
    3. Managing Nitrogen for Groundwater Quality and Farm Profitability, Soil Science Society of America, Inc., 1991.
    4. Soil Test Interpretations and Recommendations Handbook, University of Missouri, Department of Agronomy, December, 1992.
    5. Plant Available Nitrogen Procedure, Missouri Department of Natural Resources, Water Pollution Control Program, April, 1998.

23. Operation and Maintenance Manual

The permittee shall develop, maintain and implement an Operation and Maintenance(O&M)Manual that includes all necessary items to ensure the operation and integrity of the waste handling and land application systems. Copies of the O&M Manual and subsequent revisions shall be submitted to the departments Water Pollution Control Program and Regional Office for review and approval. The O&M Manual shall include, but is not limited to, the following:

a. Detailed topographic maps of the property showing all land application fields including the identification numbers for each field. The maps shall also indicate location of and separation distances from streams, ponds, wells, and property lines and shall indicate areas of 0-10% slope, 10-20% slope, and over 20% slope. Indicate areas that are not suitable for land application. The maps shall also include the location of all buildings, pump stations, storage structures, earthen basins, lagoons, containment structures, irrigation pipelines, irrigation riser connections, underground terrace outlets, composting areas, dead animal storage or disposal areas, domestic wastewater treatment systems and other waste handling units.
b. Start up procedures, field supervision during operation, and shutdown procedures of irrigation equipment.
c. Procedures for providing the separation distances required by this permit and as specified in 10 CSR 20-8.020 (15) (B).
d. Sample collection, preservation, and testing procedures.
e. Procedures for determining Plant Available Nitrogen (PAN) loading rates.
f. Record keeping forms for tracking each field and storage structure. This shall include testing results, crops, yields, and application rates for each field. Records shall include dates and amounts applied.
g. A procedure for promptly reporting spills or discharges to the permittee plant manager and to DNR.
h. A procedure for recording repair work on gravity sewer lines, recycle lines, and irrigation lines to include the reason for the repair work and the material used for the repair.
i. A program to eliminate debris and blockages of sewer lines and recycle lines and to keep debris out of the basins.
j. A procedure for twice per day visual inspections of the complete waste collection, flushing and recycle system for overflows or other operational problems.
k. A program for routine, unannounced inspections of land application sites and records to ensure that all directives for land application from the permittee's central office are being followed. Records of the inspections shall be maintained by the permittee and made available to the department upon request.
l. A procedure to assure that all appropriate employees are properly trained in operation of the waste systems and are familiar with the O&M Manual.
m. Procedure for adjusting application periods and rates based on per cent slope, soil infiltration capacity, soil moisture content, and percent of soil field (saturation) capacity. Provide procedure for field verification of slopes on each application setting.

C. SPECIAL CONDITIONS: (continued)

23. Operation and Maintenance Manual (continued)
    n. List of number, size, and capacity of waste removal, hauling and land application equipment.
    o. Number of suitable days each year when land application will occur based on historical 1-in-10-year wettest precipitation and capacity of spreading equipment and personnel available.
    p. Procedure to avoid application if there is a weather forecast for significant precipitation within 24 hours.
    q. The O&M manual shall contain an example lease agreement for land application, a current list of leasees with addresses, telephone numbers and field numbers assigned. Lease agreements shall be maintained for department review upon request. Lease agreements shall be reviewed annually in order to maintain 125% of land required for design flows. If land required for design flows falls below 125%, a plan shall be submitted to the department to decrease flows to match the land available or to implement other acceptable options to insure compliance with this permit.

24. Underground Tile Outlets at Land Application Sites
    a. Any underground tile outlets from field terraces or subsurface field drainage tiles shall be shown on the site maps for all land application sites.
    b. To prevent potential discharge of wastewater during irrigation of fields with underground tile outlets for terraced fields, the permittee shall prevent wastewater from entering the inlets at the fields during irrigation, provide a 150 foot grass buffer area between the inlets and wetted irrigation area, use subsurface injection type application equipment or install secondary containment structures below the tile outlets.
    c. The Operation and Maintenance Manual shall include specific operating details for these fields to prevent discharge of wastewater during wastewater irrigation or leaching of nitrogen through the soils and into the tile drainage system.

25. Domestic Wastewater and Sludges
    There shall be no discharge of wastewater or sludge from the domestic wastewater treatment systems. Accumulated sludge depth shall be measured at least once every five years and sludge removed as needed. The removed sludge shall be land applied in accordance with 40 CFR 503 sludge standards for septage and University of Missouri Water Quality Guide publication #WQ422.

26. Dead Animal Transfer Stations
    There shall be no-discharge from dead animal collection areas, holding areas or composting site. Any liquid drainage shall be collected and placed into the animal waste lagoon or hauled off-site to a permitted treatment/disposal facility. Dead animals shall be composted or collected and hauled off site for rendering or disposal in accordance with the Dead Animal Disposal Law under Chapter 269 RSMo.

27. Waste Characterization
    The results of a waste characterization shall be submitted with the application for renewal of this permit.

D. SCHEDULE OF COMPLIANCE

1. This permit authorizes animals to be placed in the three southern most lots on the west side of the west complex. Prior to animals being placed in the other lots, lot runoff must be diverted to the west basin. The proposed pipeline as submitted will not adequately transport the lot runoff to the west basin. An application for a construction permit and plans & specifications to divert lot runoff to the west basin shall be submitted to the department. After the issuance of the construction permit, engineering certification of the construction, and department approval of the construction, the permit will authorize the design number of animals to be placed in the west complex.